Analysis of the causal relationships in the balanced scorecard in public and private Spanish Universities through structural equation modelling

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BSC (Balanced Scorecard), EFQM (European Foundation Quality Management), SEM (Structural Equation Modelling), PLS (Partial Least Squares), Likert questionnaire, reliability PLS analysis, dimensional analysis.

Abstract

Purpose: *The purpose of this paper is to analyse the strategic models created for the public and private Spanish universities and create a new methodology or strategic management tool based on the integration of the European Foundation for Quality Management (EFQM) and the Balance Scorecard (BSC).*

Design/methodology/approach: *To examine the hypothesized model of the study, a survey questionnaire was created and sent to all the scope of Spanish universities. Using the data collected, the research was carried out using the SmartPLS software (partial least square path modelling) to analyse the proposed model.*

Findings: *Results indicate that one-dimensional models were the most suitable to explain the behaviour of public centres, whereas multifactorial models matched perfectly with private centres. Moreover, we considered that, under the model of public centres, most of the attitude in the general University Community could be explained with reliabilities and consistencies as a bonding element in both public and private centres.*

Research limitations/implications: *Due to the scarce total number of universities in Spain, 56, and their respective colleges, the sample size in the research was limited.*

Practical implications (if applicable): *This study suggests that customer participation can be a win-win situation for employees and the organisation. Employees who create relational value with their customers effectively enjoy their jobs more and are more likely to build and maintain long-term relationships with their organisation.*

Originality/value (mandatory): *The findings highlighted the roles of the customer and the employee and indicated the heuristic value of viewing job satisfaction and organizational commitment as consequences of customer participation. This study is considered one of the very few empirical studies that examine the effect of the Employer Organisation (EO) on the Enterprise Resource Planning (ERP) and the mediating effect of ERP on the EO-performance relationship.*

1. Introduction

Given the competitive nature of the world in which we are immersed, the smallest, apparently most inconsequential detail, can become a differential fact. This is reflected in a university sector in which the level of competition forces the institutions to strive toward process and attitudinal excellence in order survive.

Traditionally, the Spanish university system has been characterized by the absolute predominance of public universities over private higher education institutions. Out of the 83 universities, 50 are publicly owned and 33 private. The number of private universities is proliferating in recent years, creating an average of a new university per year. So, while the rate of change of the number of enrolments in 2013-14 / 2003-04 was -5 % in public universities, in the same period it was + 3.5% for private ones (Ministerio de Educacion, 2015).

This competition makes the two types of universities strive to be excellent in their processes and attitudes when it comes to attracting prospective students

To achieve this goal, higher education institutions started implementing quality management systems by the mid-1990's according to the quality awards of ISO in Europe, Australia and USA; Deming Prize in Japan, Malcolm Baldrige Quality Award in the USA, and European Quality Award in European countries (Mehralizadeh and Safaeemoghaddam, 2010).

Among the techniques and tools available for business management, two of the most widespread and well-known models in the current economic environment are the EFQM Excellence Model and the Balanced Scorecard (Trullenque F.E. et al., 2002), which may be applied to the education field.

2. Theorical Approach

2.1 EFQM – European Foundation for Quality Management

The EFQM Excellence Model has its roots in the philosophy of Total Quality Management (TQM). It was created in 1991 by the European Foundation for Quality Management (EFQM) as a framework against which applicants for the European Quality Award are judged, and in order to recognize organizational excellence in European companies. Nowadays, the EFQM brings together more than 700 members located in many countries across the world (Bou-Llusar et al, 2008).

The model is meanwhile the main reference for European companies that aim to achieve sustainable performance by meeting all stakeholders' expectations. This model consists of three main parts: the EFQM criteria and sub-criteria; the EFQM fundamental concepts; and the RADAR logic (Amir and Reiche, 2015).

The *EFQM model* is based on nine criteria divided into five *enablers*, that is the things an organisation needs to do to develop and implement their strategy (leadership, strategy, people, partnerships & resources and processes, products & services), and four *results*, which are the results an organisation achieves in line with their strategic goals (people results, customer results, society results and business results). These nine criteria are ultimately constructs that are measured by observed variables or indicators (Pastor et al. 2012).

The *EFQM fundamental concepts* define the underlying principles that form the foundation for achieving sustainable excellence in any organisation.

Adding Value for Costumers
Creating a Sustainable future
Developing Organisational Capability
Harnessing Creativity & Innovation
Leading with Vision, Inspiration & Integrity
Managing with Agility
Succeeding through the talent of People
Sustaining Outstanding Results

As another self-assessment tool, the MNBQA was considered instead of using the EFQM Model. Created in 1987, the American model was created to identify and recognize the model companies in its sector and to disseminate and share best practices. It was introduced first in business and then moved to the field of health care and education (Lotto Lai, 2012).

The EFQM model was chosen instead of the MBNQA because the EFQM gives more value to the customer perspective, internal business processes and learning &growth and gives less importance to the strategy of the company and the financial perspective. On the other hand, the MBNQA model considers the prospects of learning & growth and financial perspective and gives more value to the definition of the mission, vision and strategy of the organization. However, customers and processes are the least valued in the MBNQA model (Pastor Tejedor et al., 2012).

2.2 BSC – Balanced Score Card

The BSC is an advanced model of strategic orientation of organizations. Widely used by businesses, it is also found that 54 per cent of the 1,230 global firms sampled had reported the use of a BSC (Rigby, 2011).

The birth of this model was preceded by the work of R. Kaplan and D. Norton, in the early nineties as a tool that could measure the performance of an organization in a comprehensive way, including not only the traditional measure of financial aspects but also those intangible indicators that may predict future financial results. In later stages, the BSC deeply evolved in the design and development of advanced integrated elements of strategic deployment and management (Kaplan and Norton 2000).

The aim of the BSC was to allow managers to identify what changes had led to the desired organisational outcomes. From a broader business point of view, strategy maps allow managers to see how the company can convert its "raw materials" such as initiatives, resources, and intangible assets into tangible outcomes (Perkins, Grey and Remmers, 2014). The Balanced Scorecard is a logical strategic framework organised across four key perspectives, which enables an organisation to articulate its strategy in a set of focused, strategic objectives and measures:

Financial Perspective. For most organisations, this perspective describes the financial objectives that need to be achieved to meet the expectations of the shareholder, being market presence, economic returns, or asset utilisation. Crudely speaking, at the highest level, the shareholders' main concerns will fall into two broad categories, one of revenue generation, the other of productivity and cost effectiveness, together yielding a level of returns demanded by the shareholder.

Customer/External Perspective. The customer perspective focuses on describing the key attributes of the product/service offering which represent value for the customer from the customer's point of view. This

perspective expresses the needs of the customers and identifies those components of value within our service offering which both satisfy the customer's expectations and that the customer is willing to pay for at a price which generates the economic returns the company requires. City investment advisors, industry regulators, or suppliers can play the role of customer.

Internal Perspective. The Internal perspective describes the processes and activities that if executed at the highest level of performance will drive success in meeting the Financial and Customer objectives. In developing the Internal perspective, we focus on identifying those elements of a company's value chain that have the greatest or most significant impact on satisfying the customer and producing the financial returns the company aims for.

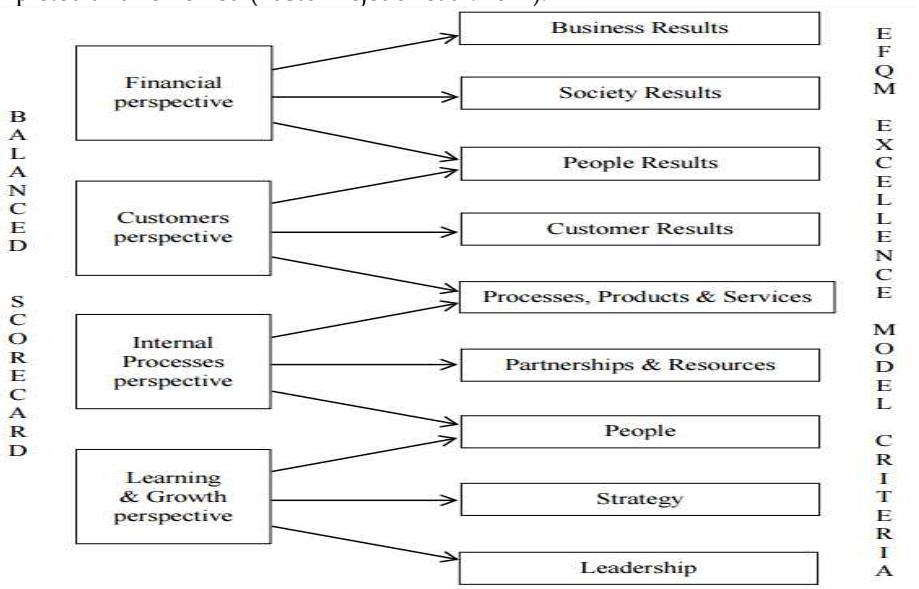
Learning and Growth Perspective. Once we've understood and clearly expressed the critical drivers of value at the Financial, Customer and Internal Processes levels, we shall identify those areas which require investment today to deliver the strategy as described by the Balanced Scorecard objectives. These 'Learning and Growth' or 'Innovation' areas are often referred to as enablers. They are traditionally supporting activities within a business or activities typically not directly linked to the bottom line (Lamotte and Carter, 2000).

2.3 Conceptual integration of the two models EFQM and BSC. Why work both together?

The BSC and the EFQM are tools used to measure business performance to seek improvement. Both tools have been widely adopted and address similar issues. However, there are some differences between the two tools. While the BSC focuses on being a strategic management tool, the original design of the EFQM as a diagnostic tool raises serious doubts about its effectiveness as a strategic management tool (Andersen et al, 2000).

An organization using the EFQM Excellence model will have a good and comprehensive understanding of their strengths and weaknesses at operational level. As a result of the evaluation, an organization will have an indication of where it may be necessary to significantly improve, how to do it properly and where the organization stands in relation to the ideal reference point. However, you cannot have a strong sense of where to invest as a strategic priority, or what improvement will make the greatest impact on business performance and results. The Balanced Scorecard can be used at this point to provide the necessary action to prioritize and allocate strategic resources.

Once an organization has identified its strategic performance measurement and associated goals and initiatives using the Balanced Scorecard, there is clear value in being able to appreciate the quality of the processes that can support the strategic objectives and measurement identified through the BSC. Quality processes are clearly important to achieve strategic objectives. We can gain a depth of understanding about the challenges that the company may face to meet strategic objectives (Lamotte and Carter, 2000). The EFQM and BSC are complementary. The EFQM needs the BSC to align with the mission, vision and strategy; prioritize action and allocate resources; and facilitate communication of strategic objectives. The BSC needs the EFQM to be assessed, completed and reviewed (Pastor Tejedor et al. 2012).



2.4 Examining the settings that such an integrated model has been applied in the past

A few authors have analyzed connections between the BSC and EFQM Excellence model. For example, the feasibility of the integration as well as the influence of using these models on improvements in implementing and assessing strategies and performance is proved (Shahin et al., 2012). [37] On the other hand, other authors tried to show the synergic effects of their parallel implementation (Lamotte & Carter, 2000; Bettsa, & Croom, 2011).

Both qualitative and quantitative benefits are perceived to have been correlated with, or come from, implementations of the Balanced Scorecard. For example, within the healthcare sector, the Mackay Memorial Hospital in Taiwan adopted the BSC model with outstanding improvements in performance results. Apart from improvements in financial and patient satisfaction, there were improvements in a number of other areas. For instance, in the social commitment perspective, the number of visits by the disadvantaged rose by 19% between 2003 and 2005. In the internal process perspective, the delay between a request and obtaining antibiotic consultations was shortened from 40 hours in 2004 to 21 hours in 2005. In the learning and growth perspective, the number of Science Citation Index papers rose from 132 in 2003 to 195 in 2005 (Chang et al, 2008).

2.5 The Integrated model adjusted and examined into a university setting

The initial idea was to elaborate preliminary hypotheses for two possible Balanced Scorecards, one for each of the two types (public and private) of Spanish universities.

2.5.1 Strategic map applied to Public Universities

Taking into account the four perspectives of the BSC model (finance, customer-society, internal processes, learning & growth), in the case of public universities, customer-society (the perspective in which objectives are most related to the mission of the organisation) is found at the top of the map (Kaplan and Norton, 2000, 2001, 2004; Pastor Tejedor et al., 2008; French et al., 2001; Yetano, 2005).

H1. The financial perspective as base model.

This can be explained by the fact that public universities are not concerned with economic issues as they are financed by the government and it is the government that manages investments, budgets and the like through the corresponding ministry and university; public universities are therefore ensured of continuity. The public university must concentrate its efforts on the fulfilment and satisfaction of the needs and requirements of the students and, by extension, society in general as the public university can be considered as a societal good or service. In addition, it does not depend on the activities of the university as centralised bodies provide public university funding.

H2. The learning-growth and internal processes closely related to the financial perspective

It is government funding that allows public universities to carry out their improvement actions. In other words, the tasks of learning and growth that show what must be done (and how) to achieve excellence; in the same way, based on the financial perspective and economic support, public universities are able to invest money and time in improvement and show themselves to be innovative in specific processes. This, in turn, demonstrates the third hypothesis

H3.Relationship between learning-growth and internal processes.

The first perspective explains how the organisation must learn to improve whilst the latter concentrates on specific issues concerning the most relevant processes of improvement and innovation.

H4.Customer-Society as the final goal

The strategic map is completed by defining the objective or goal of public universities: the customer-society perspective. It is clear that the other three perspectives have a positive influence on this last dimension – the ultimate goal of the public university is the satisfaction of the student and the provision of an adequate educational experience and other related services, as shown in Figure 1.

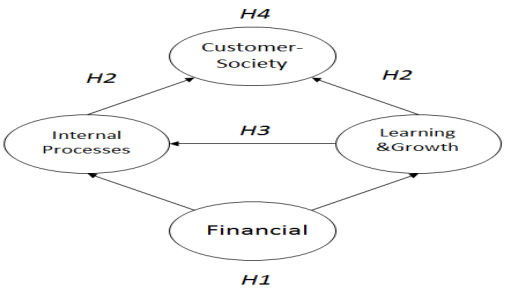


Figure 1. Strategic map – Public universities

2.5.2 Strategic map applied to Private Universities

The situation shown in Figure 2 is radically different.

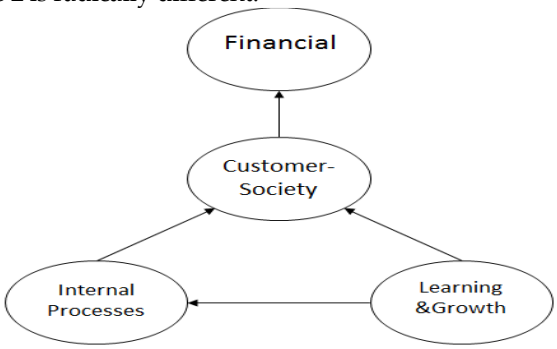


Figure 2. Strategic map – Private universities

H1. Financial mission

In this case, activities are focused on the gaining of maximum economic profit as the final goal. A significant difference between the private and public service sector is the notion of serving customers or citizens (Rosen, 1993).

H2. Learning & Growth and Internal Processes at the base of the strategic map

In general, private universities are creative and innovative institutions as they must show themselves to be different if they are to be successful. If the university is aware of how and why it must improve, it will be able to apply it to real-life situations.

H3.Customer-Society as a result of Learning & Growth and Internal Processes

Furthermore, both perspectives are totally customer-centred, and this is due to the fact that learning and process improvement are the tools that private universities employ in order to gain a greater market share and differentiate themselves from the competition by offering services that are not available at other similar institutions. Private universities must respond to market demand; their consumers usually have high purchasing power and are prepared to pay a high price on the condition that they receive an exclusive educational experience and related services. All this has repercussions on income received (financial perspective): if the processes are able to fulfil customer expectations, the customer will be satisfied and the institution will earn economic profit.

3. Methodology

3.1 Sampling Design and data collection

After the consideration of the EFQM and BSC models, both individually and as a whole, they were applied to the specific case of Spanish universities. A questionnaire was designed (see *appendix I*), based on the *PERFIL tool* (an EFQM self-assessment model that can be applied to the field of education), which aimed to resemble the BSC and integrate the two aforementioned tools. The objective of the questionnaire was the obtaining of enough data to be able to demonstrate the validity of the strategic maps. According to Hair (Hair et al., 2016), the observation to variable ratio should not fall below five (5:1) although the preferred ratio recommended should be ten for each independent variable (minimum observation to variable ratio is 10:1). Therefore, taking into account that the independent variable is the exogenous variable, a minimum of 40 universities are required, both public and private. Since 45 private universities and 84 public universities replied back, the minimum sample size criterion is satisfied.

The assessment was based on the *Likert scale*, following the scheme proposed by the EFQM PERFIL Model. Rensis Likert invented his psychometric scale in the early 1930s and it is a well-used tool for both researchers and practitioners. The scale, which is commonly used in the measurement of the behaviour of social phenomena is ordinal and as such does not measure the favourability of an attitude. The assessment criteria follow a scale from nought to one-hundred, nought being "very negative/without evidence" and one-hundred, "documented evidence with over two year experience". Once the answers were collected, ordered and stored, the next phase was the assessment and analysis of the data received.

3.2. SEM - Structural Equation Modelling

Also known as path analysis, SEM is a very powerful technique that enables researchers in measurement of direct and indirect effects that cannot be analysed because they are hypothetical, or not directly observable. Referring to the definition of his creator, Sewall Wright (1921), the model is a statistical method in order to test and estimate casual relationships by using casual assumptions and statistical data.

The fundamental characteristic of SEM is that it allows multiple regressions between variables and latent variables. It is referred to these models as a second generation of multivariate analysis (Fornell, 1982).

The model can be supported according to two different approaches:

CB-SEM (Covariance-Based approach). The aim of Covariance-based techniques is to reproduce the sample covariance matrix by the model parameters. In other words, model coefficients are estimated in such a way to reproduce the sample covariance matrix. In the covariance based approach, the measurement model is typically considered as reflective, the multivariate normal must be respected if estimation is carried out by means of the ML and works on a large sample.

PLS-SEM (Variance-based approach). It is a causal modelling approach aimed at maximizing the explained variance of the dependent latent constructs (Hair, 2015).

Small groups of data

Measurements that have not been fully developed

Theories that have not been fully developed

Data with non-normal distribution

The presence of formative and reflective indicators

Interest in predicting the dependent variable

We decided to utilise SEM-PLS because of the following reasons:

Research objective is prediction and theory development, therefore the variance method is appropriate.

Relatively small size of the study sample; the complexity of the models designed.

Most importantly, the possibility of employing a methodology that is not widely known (covariance models and analysis tools such as EQS and AMOS are much more common) and has, until now, never been used in a context of such interest as the university sector

3.3.1. Model Specification and Analysis

The first stage of a PLS analysis is a graphic description of the model; a structural model must be designed along with the identification of existing relationship between indicators and constructs.

Before beginning the analysis, it is necessary to design a series of monograms to be used in the evaluation of the structural model, as shown in Figure 4 and Figure 5.

Then, the criteria for assessing the model was set.

3.3.1.1. The measurement, Outer Model

The content validity. The content validity is the case when the items used to measure show a higher load on their construct than other constructs in the model. Therefore, based on the suggestion of Chin (1998) and Hair et al. (2010) the load factors were used to examine the content validity. If items are loaded higher on other constructs than their loadings, they will be deleted. The results showed that all the items which loaded highly on their respective constructs are more than other constructs. Thus, this result confirmed the content validity of the measurement model.

Internal Consistency Reliability. Cronbach's alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is considered to be a measure of reliability of a scale. The scale is considered as acceptable if the Alpha value is greater than 0.7 (Nunnally, 1978). One of the advantages of this method is the possibility of evaluating how much reliability would improve (or worsen) with the exclusion of a particular item (Chin, 2002; Visauta, 1997).

With the aim of guaranteeing scale consistency, a number of items were eliminated; this depuration improved the Cronbach Alpha to the objective of a minimum of 10% and item-total correlation limit was set at 0.44.

After completion of the reliability analysis it was concluded that the following items were detrimental to the reliability of the scale or questionnaire and therefore unsuitable for this study (Appendix II). In the search for more consistent variables, the threshold was raised to 0.4, higher than the 0.3 of Nurosis (1993) or the 0.35 set by Cohen– Manion (1990).

Alternative to Cronbach Alpha, Composite Reliability that attempt to measure the sum of an LV's factor loadings relative to the sum of the factor loadings plus error variances (Nunally and Bernstein, 1994).

Convergent Validity. According to Hair et al. (2010), the convergent validity is the degree to which a set of items converges to measure a specific construct. In SEM literature, it can be examined by loadings, the composite reliability, and the average variance extracted (AVE). That is, the loading should be highly loaded and statistically significant in measuring variables with at least 0.7 of factor loadings, at least 0.5 of AVE for each construct, and at least 0.7 of the composite reliability. The results showed that the data obtained exceeded the specified limit values. Hence, the convergent validity of the model was confirmed (Bagozzi and Yi, 1988). The reliability of the constructs were examined by comparing the Cronbach's α values and the composite reliability values, as illustrated in Table II, with the cut off value of 0.7 suggested by the previous researchers such as Nunnaly (1974) and Hair et al. (2010). The Cronbach's α and composite reliability values of all the constructs were higher than 0.7 indicating that all the items have an adequate reliability in measuring their respective constructs.

Discriminant Validity. The discriminant validity is defined in the literature of SEM as the degree to which a set of items can differentiate a variable from other variables in the model. That is, the construct's items should have variances among them more than the variance shared with other constructs. Fornell and Larcker (1981) suggested a criterion to test the discriminant validity. Following this criterion, a comparison should be conducted between the diagonal elements in Table III, which represent the square roots of AVE, with the correlation values as off-diagonal elements. The discriminant validity can be concluded if all the diagonal values are higher than the off diagonal values located in the same row and columns. The results depicted in Table III fulfilled the said criterion confirming that the measurement model has the required discriminant validity.

3.3.1.2. The structural model (inner model)

Once the validity and reliability of the measurement model have been evaluated, the next stage is the evaluation of the structural model (Díez Medrano, 1992); this involves evaluating the weight and magnitude of the relationships between the different variables (perspectives) and this helps differentiate between the relevant causal hypotheses and those that are not supported by the empirical evidence.

The analysis of the structural model requires the answering of two questions:

1. What degree of the variance of the endogenous variables is explained by the constructs that they predict?

2. To what extent do the predictor variables contribute to the explained variance of the endogenous variables?

These two questions are answered by the use of two types of indexes: R2 and the standardised coefficients β.

A measurement of the predictive power of a model is the value of R2 for the latent dependent variables. This measurement indicates the quantity of variance of the construct that is explained by the model. This value must be greater than 0.1 as lower values provide insufficient information.

The second index is the coefficient β, the coefficient path or weights of standardised regressions. The coefficient can be easily identified in the nomograms as it coincides with the arrows. To be sufficiently significant, the β must have a value of over 0.3.

In addition to these two measurements, it is also common to use nonparametric resampling techniques to examine the stability of the estimations made by PLS; two of the most commonly employed are *Bootstrap and Jackknife*.

Before the detailed analysis of each case, the *multifactorial character* of some of the different models of nomograms for the two university types must be noted. This is of great importance as the application of a complex methodology is necessary for the analysis; the methodology is explained below.

The multifactorial cases requires a two phase PLS methodology:

The first phase only deals with first order constructs and treats them as if they were unique. Relations are established between these constructs and all the other constructs with which second order constructs are related. Once all first order constructs are related with the second order constructs, the PLS graph is used to extract scores for the factors which are then used in the second phase as indicators of the second order constructs.

The second phase is based on the scores obtained from the first phase instead of first order factors. From this point, the operations for the analysis of the results are the same as any one-dimensional model.

The specific application of these concepts and knowledge identifies which of the test models is best adjusted to explain the behaviour of each of the types of universities involved in this study.

4. Findings, Discussion and further research issues

4.1. Model for Public Universities

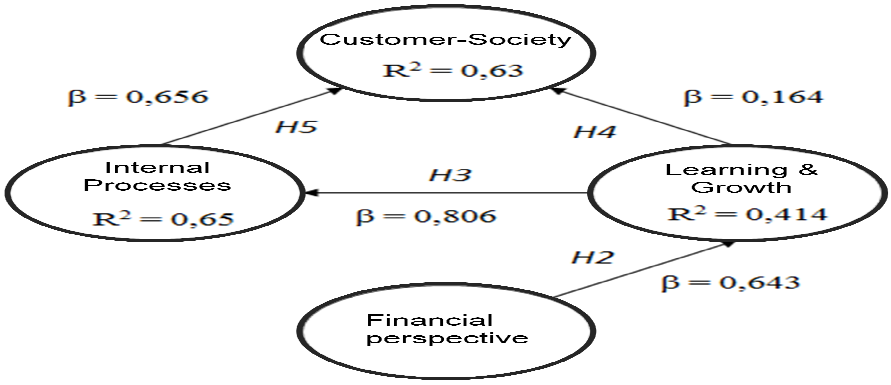


Figure 4. One-dimensional public university model. Source: the authors.

After item depuration, the one-dimensional model was seen to be better adjusted to the behaviour of public universities than the multifactorial model, although the latter was not completely unsuitable. The advantages of the one-dimensional structure were the high reliability of the measurement scale and the weighting that gave the relationships of the BSC perspectives a greater potential than the multifactorial model. This is due to the greater consistency of the measurements of the one-dimensional model – any other type of indicator grouping does nothing more than produce intermediate measurements that do not give any value: in a one-dimensional sense, all indicators explain the demonstrative model with adequate variance and correlation values. All the relationships except one (financial-internal processes) supported the ideas stated in the first stage of the project. The elimination of that relationship led to the conclusion that all income and economic support enjoyed by the universities is dedicated towards the learning of new processes for improvement staff satisfaction, availability of information, staff alignment etc.) rather than the development of more specific processes as these cannot be effective without the development of the previous processes. This is reflected by the explained variance value of the internal processes perspective by growth & learning with a value of 69% which implies that only about 31% of the variance of the internal processes variable is not due to growth & learning. The fact that the internal processes perspective accounts for 69% of the variance of the model demonstrates that it plays a vital role in the development and work of public universities. It is also worth noting that the data shows that the most important variable is the customer-society perspective, the ultimate end-users of all public universities.

4.2. Model for Private Universities

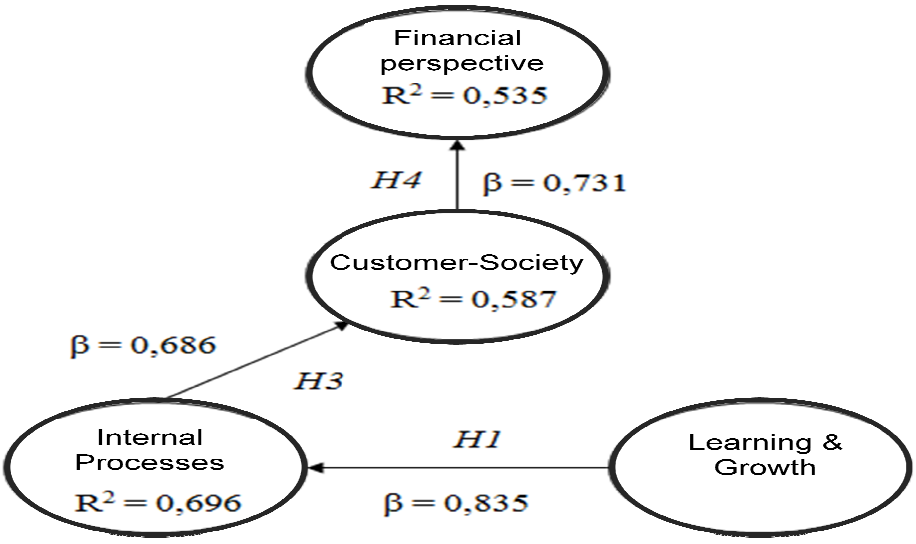


Figure 5. Multifactorial private university model. Source: the authors.

In this case, both testing models are multifactorial. There are some small differences between them; the multifactorial structure best reflects behaviour although it is based on groupings of indicators in objectives within each perspective following hypotheses made before undertaking the study. The main difference between them is concerned with the weighting of the relationships between the BSC perspectives. A point worth noting, and something that is reflected in both structures, is the elimination of most of the indicators of the financial perspective (F1-F3-F4-F5) due to the reticence of private universities to consider their functioning from any point of view that is not economic-organisational. In both structures, it is noticeable that there is no verification of the relationship between growth-learning and customer-society, this is due to the fact that in private universities, innovation and process improvements are not directly reflected by the students but by the internal processes that are affected by the new processes which are introduced. Once this was explained, the next step was to confirm the logic of why one model was considered as better as the other. This was based on the weighting and importance of the relationships: the factorial model offered superior explained variance percentages, being internal processes the most important perspective. Almost all the variance is explained by the model, more specifically, by the exogenous construct of learning-growth. The other relationship of great importance and interest is the link between customer-society and financial; the verification of this relationship was fundamental to demonstrate the validity of the hypothesis as, from the early stages, the financial perspective played a fundamental role as it is at the summit of all the relationships and therefore the ultimate objective of all private universities. The fact that almost 80% of the variance of the financial perspective is explained by the customer-society perspective provides more than sufficient evidence.

5. Conclusions

In the first place, the great importance of both the Balanced Scorecard and the integrated BSC & EFQM model in the strategic analysis of any type of organisation must be emphasised. In this study of the university sector, the BSC detected some inequalities at the point of understanding and focusing efforts on concepts related to excellence and best practices and this behaviour made the first phases of the study more difficult.

Internal Processes. Given the structural models accepted for each type of university, internal processes and (especially) their relationship with learning are the cornerstones of the behaviour of both universities and many other organisations, due to their high relative weighting (the values of β coefficients). Of even greater interest is the fact that this applies equally to private and public institutions.

Growth-Learning and Internal Processes. Also noteworthy are the fundamental attitudes in the relationship between these two the university community; in the testing models they were responsible for almost 70% of the 90% model variance.

Finally, it should be pointed out that the behaviour and attitudes of both private and public university institutions are closer to those of the public university. This conclusion was reached due to the low relative weighting of the relationship between the customer-society and financial perspectives, so important to private universities but which failed to reach 50% of the model variance.

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7. APPENDIX

APPENDIX I – Questionnaire based on the PERFIL Assesment

Customer-society perspective (CS)

CS1- Does the university have a vision of who its students are?

Does the university interact with the students, gathering information on their current and future

expectations and needs?

CS2- Are there efficient communication processes for the students, the staff and other

members of the organisation?

If yes, does the university take their complaints, suggestions and opinions into account?

CS3- Does the university evaluate and take into account performance indicators such as success rates,

drop out level, awards etc.)?

Are objectives achieved? If not, are improvement actions implemented?

CS4- Does the university have reliable data on satisfaction levels of students and staff at

other leading universities?

Is this information used to establish reference values and to set more and more

ambitious objectives?

CS5- Does the university get involved in social initiatives and assess societal needs?

Financial perspective (F)

F1- Has the university developed and implemented an economic-financial strategy that is aligned with policy and strategy? Is it regularly reviewed?

F2- Is there evidence of a clear correlation between policy, strategy and the budgetary programme?

F3- Does the centre define an investment plan in accordance with its policy? Is it reviewed? Within the investment plan, does the university analyse the most important investments, assessing Indicators such as profitability, recovery time and risk?

F4- Are there management indicators that make clear the relationships between investments and process improvements at the university?

F5- Does the university have a database of all suppliers? Is an assessment made of each one of them in relation to their alignment with the policy and strategy of the university? Once the most interesting are identified, are cooperation and continuous improvement links established?

F6- ¿Does the university have an inventory management system? Are resources correctly managed? Does consumption minimise waste and encourage the use of renewable resources?

F7- Is the impact of the assets of the university on staff and society in general, considered in relation to questions of safety and hygiene?

Internal processes perspective (IP)

PI1- Is creativity and innovation applied to the development of new educational services demanded by the students and society?

PI2- Is there a systematic process of identification and prioritisation of opportunities for immediate or continual improvement based on the measurement and results of operational performance and information on learning processes?

PI3- Is there an operational system of process management, regular self-assessments etc. in accordance with ISO or similar standards? Do these systems identify process errors and facilitate improvement actions?

PI4- Are there efficient attention and communication processes directed at students, staff and members of the university community? Is effectiveness measured, results evaluated and (if necessary) corrective/improvement actions taken?

PI5- Does the university participate in informative sessions related to its study plans,

services etc. with the objective of informing future and even current

students?

PI6- Are there tools such as information points, bulletins or service guides that offer

the university community information on new processes?

Learning-growth perspective (LG)

LG1- Does the university have a HR management plan?

Does this plan respect staff and ensure equal opportunities?

LG2- Are the needs and capacities of the staff identified through job specifications or a manual of work responsibilities?

Are general, specific, individual or collective training plans drawn up and implemented?

LG3- Does the university ensure that all staff participate in the development of different policies,

strategies and activities and take their opinions into account?

LG4- Is the participation, initiative and ideas of the members of the university

valued and rewarded?

LG5- Does the university have and continually improve advanced communication tools

(virtual secretary, meetings, surveys etc.) that facilitate the

exchange of information with students, staff and the university community

in general?

LG6- Does the university ensure the effectiveness of its communication channels and their use as a

media for sharing best practices and knowledge?

CA7- Does the university run regular process assessment programmes such as

internal or external audits, self-assessments etc?

Is the data collected from such exercises used to establish continual improvement plans and

objectives?

LG8- Is information relative to current and future tendencies (of a general and specific nature) systematically collected?

Is this information used as a basis for a SWOT analysis to determine improvement actions that can

be taken?

APPENDIX II - Indicators eliminated in the reliability analysis.

A 1. Indicators eliminated in the reliability analysis.

Customer-society perspective	**-** --
Financial perspective	F5
Internal processes perspective	Pi3-pi5
Learning and growth perspective	Ca1-ca2